

REMARKS

In view of the above amendments and the following remarks, reconsideration of the outstanding office action is respectfully requested.

Of the patent claims, claims 12, 13, and 22 are pending, while claims 1-11, 14-21, and 23-26 are canceled. Added claims 27-32, 40, and 50 have been canceled. Claims 39 and 49 have been amended so that they include the limitations of claims 40 and 50, respectively. Claims 45 and 48 have been rewritten in independent form. Amended claims 39, 45, 48, and 49 are supported by the disclosure in the same manner as pre-existing claims 39 and 40, 43 and 45, 46 and 48, and 49 and 50, respectively.

The rejection of claims 39, 40, 49, and 50 under 35 U.S.C. § 102(b) as anticipated by Japanese Kokai Patent Application No. 138145 to Kawaguchi et al. ("Kawaguchi") is respectfully traversed.

Kawaguchi relates to a method of making a quartz glass element by synthesizing silica particles from a silane compound or a siloxane compound (e.g., hexamethyldisiloxane) and depositing the particles on a rotating carrier at a thickness of 1-300 µm. After deposition, the particles on the carrier are vitrified to form a glass. There is no disclosure of preparing glass from a polymethylcyclsiloxane.

Anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. Glaverbel S.A. v. Northlake Mkt'g & Supply Inc., 45 F.3d 1550, 1554, 33 USPQ2d 1496, 1498 (Fed. Cir. 1995) (method); In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990) (composition). Thus, if a single claimed element is absent from the reference, the reference does not anticipate. Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986); Tyler Refrigeration v. Kysor Indus. Corp., 777 F.2d 687, 689, 227 USPQ 845, 846 (Fed. Cir. 1985). The claim limitations of an anticipatory reference may be explicitly or inherently present in that reference. To be inherent, however, the missing descriptive matter must *necessarily* be present in the thing described in the reference, and be so recognized by persons of ordinary skill. See In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999); Continental Can Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). Mere possibilities or even probabilities are insufficient. Continental Can, 948 F.2d at 1269, 20 USPQ2d at 1749 ("[t]he mere fact that a

certain thing *may* result from a given set of circumstances” is not sufficient) (quoting In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (C.C.P.A. 1981)) (emphasis in original); see also In re Robertson, 169 F.3d at 745, 49 USPQ2d at 1950-51 (same); Glaxo Inc. v. Novopharm Ltd., 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995) (affirming district court’s rejection of anticipation argument, because the disclosed process could produce either the claimed result or another result).

The U.S. Patent and Trademark Office (“USPTO”) has conceded that Kawaguchi does not specifically name polymethylcyclsiloxane as a starting material for the production of glass. Since the use of polymethylcyclsiloxane is a required element of the claimed method for producing glass, the absence of this element in Kawaguchi disqualifies the reference as anticipatory prior art based on the above standard.

In support of its rejection, the USPTO has relied on In re Petering, 301 F.2d 676, 681, 133 USPQ 275, 280 (CCPA 1962), which provides that a generic chemical formula may anticipate a claimed species covered by the formula if one of ordinary skill in the art would “at once envisage” each species of a limited class of claimed member species. See also M.P.E.P § 2131.02, at 2100-71 (Aug. 2001). However, in order for the reference to be anticipatory, the claimed subject matter must not simply fall within a generic disclosure but must be within a limited, well delineated class. See In re Ruschig, 343 F.2d 965, 973-74, 145 USPQ 274, 281-82 (CCPA 1965); Petering, 301 F.2d at 681-82, 133 USPQ at 279-80.

In Petering, the court concluded that the claimed compound was described by the prior art reference which described some 20 compounds of a limited class. 301 F.2d at 681-82, 133 USPQ at 280. However, the court also made it clear that a generic chemical formula could not anticipate a claim to a particular compound if the formula encompassed a vast number of compounds. Id.

The decision in Ruschig is particularly helpful in defining the limits of the Petering-type analysis. In Ruschig, the court held that an anticipation rejection was not appropriate, because the genus of compounds described in the prior art reference did not represent a small recognizable class of compounds with common properties. 343 F.2d at 974, 145 USPQ at 282. The court concluded that the selection and recombination of the substituents described in the prior art under consideration would result in a class of compounds ranging from 130 to 150 different compounds

per reference. Id. In addition, the court cautioned against the indiscriminate use of Petering to support an anticipation rejection, stating that:

We did not intend our Petering opinion or decision to become precedent for the mechanistic dissection and recombination of the components of the specific illustrative compounds in every chemical reference containing them, to create hindsight anticipations with the guidance of an applicant's disclosures, on the theory that such reconstructed disclosures describe specific compounds within the meaning of section 102.

Ruschig, 343 F.2d at 974, 145 USPQ at 282.

In the outstanding office action, the USPTO has taken the position that Kawaguchi anticipates the claims of the present application, because Kawaguchi discloses a generic formula that could cover, but does not necessarily include, the three substituents that comprise polymethylcyclsiloxane; namely, silicon, hydrogen or aliphatic hydrocarbon, and oxygen. Although the USPTO has conceded that Kawaguchi does not specifically teach the use of polymethylcyclsiloxane to produce glass, it has rejected the claims of the present application for anticipation, because the use of the three specifically claimed polymethylcyclsiloxanes would be at once envisaged by one of ordinary skill in the art based on the teachings of Kawaguchi. To support this view, the USPTO has sought to piece together various aspects of Kawaguchi to arrive at the conclusion that this reference teaches these polymethylcyclsiloxanes as a starting material for glass. In particular, the USPTO points to the disclosure of linear siloxanes and various methylsilanes in Kawaguchi as support for the rejection. These aspects of Kawaguchi are completely insufficient to support an anticipation rejection.

Further, since the generic formula of Kawaguchi does not have an upper limit for the integer "x" (i.e., the number of silicon substituents), the formula $\text{Si}_x\text{R}_y\text{O}_z$ encompasses an indefinite number of compounds. Also, Kawaguchi discloses a diverse group of substituents that could be used as the "R" group, including "a hydrogen atom or an aliphatic monovalent hydrocarbon group to be selected from alkyl groups such as methyl, ethyl, propyl, or butyl, cycloalkyl groups such as cyclohexyl, alkenyl groups such as vinyl and allyl, etc." (page 6, lines 10-14). Although Kawaguchi discloses methylsilanes and polymethylsiloxanes, this does not mean the three claimed polymethylcyclsiloxanes (i.e., octamethylcyclotetrasiloxane,

decamethylcyclopentasiloxane, or hexamethylcyclotrisiloxane) are necessarily present. The specific silanes taught by Kawaguchi are not siloxanes and the specific siloxanes shown are not the three specified methylcyclsiloxanes. The language in Kawaguchi that the disclosed siloxanes are represented by the general formula $\text{Si}_x\text{R}_y\text{O}_z$, where "y and z are positive integers which are not higher than $2x+2$ and $2x$, respectively," does not mean that y and z can, in fact, be lower than these values, especially in the absence of any mention of polymethylcyclsiloxanes. The USPTO's assertion to the contrary is nothing more than unsupported speculation. In any event, the generic disclosure by Kawaguchi of an infinite number of compounds can hardly constitute the limited disclosure necessary to anticipate the claimed class of only three specific polymethylcyclsiloxanes.

For all of these reasons, the rejection under 35 U.S.C. § 102(b) for anticipation by Kawaguchi is improper and should be withdrawn.

The rejection of claims 41 and 42 under 35 U.S.C. § 103(a) for obviousness over Kawaguchi is respectfully traversed.

A proper *prima facie* showing of obviousness requires the USPTO to satisfy three requirements. First, the prior art relied upon, coupled with knowledge generally available to one of ordinary skill in the art, must contain some suggestion which would have motivated the skilled artisan to combine references. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Second, the USPTO must show that, at the time the invention was made, the proposed modification had a reasonable expectation of success. See Amgen v. Chugai Pharm. Co., 927 F.2d 1200, 1209, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991). Finally, the combination of references must teach or suggest each and every limitation of the claimed invention. See In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

The USPTO has taken the position that Kawaguchi teaches the use of oxygen in a gas stream to produce glass. However, as described above, Kawaguchi is deficient in that it does not teach the use of the three specifically claimed polymethylcyclsiloxanes as a starting material for the production of glass. Further, there is no suggestion or motivation based on Kawaguchi to use these polymethylcyclsiloxanes as the starting material. Thus, the USPTO has not met its burden of showing *prima facie* obviousness, so the obviousness rejection based on Kawaguchi is improper and should be withdrawn.

The rejection of claims 12, 13, 22, 33-44, 46, 47, and 50-53 under 35 U.S.C. § 103(a) for obviousness over U.S. Patent No. 4,501,602 to Miller et al. ("Miller") in view of European Patent No. 38,900 to Schwarz et al. ("Schwarz") and, optionally, U.S. Patent No. 2,272,342 to Hyde ("Hyde") and/or Kawaguchi is respectfully traversed.

Miller relates to producing glass optical waveguides by generating a silica soot, depositing it on a surface, and consolidating the deposited soot to produce a glass. To the extent a source for the silicon soot is specifically identified, Miller mentions silicon tetrachloride (See Example 7). There is no disclosure of polymethylcyclotrisiloxane.

Schwarz relates to a method of making pyrogenic silica with siloxanes, such as hexamethylcyclotrisiloxane or octamethylcyclotetrasiloxane. Schwarz manufactures a silicic acid dispersion having a specific BET surface of 250 ± 25 to 350 ± 25 m²/g and a thickening viscosity of 4000 to 8000 mPas in unsaturated polyesters by burning a siloxane or mixture of siloxanes in the presence of hydrogen or a hydrocarbon. Suitable siloxanes include hexamethylcyclotrisiloxane or octamethylcyclotetrasiloxane.

Hyde discloses making a transparent article of silica by oxidizing silicon. Like Miller, Hyde contains no disclosure of using polymethylcyclotrisiloxane. Only the use of silicon chloride, silicon chloroform, methyl silicate, and ethyl silicate, which are very different from polymethylcyclotrisiloxane, are mentioned in Hyde.

Kawaguchi is described above.

It is the USPTO's position that the method of making fused silica, as disclosed in the present invention, would have been obvious in view of the combination of Miller, Schwarz, Hyde, and Kawaguchi. Miller is cited as teaching the claimed method of making either optical waveguide fibers or a non-porous body, each made of high purity fused silica, in accordance with the present invention, except that it utilizes silicon tetrachloride as the source of silicon. However, Schwarz is cited as teaching the use of cyclotrisiloxanes instead of silicon tetrachloride to eliminate the use of chlorine and the production of acids. Hyde is cited to show that one of ordinary skill in the art would expect hydrolyzable compounds to be useful in making silica soot. Further, it is asserted that one of ordinary skill in the art would have expected the use of polymethylcyclotrisiloxanes to be successful in view of Kawaguchi's use of siloxanes in making high quality silica glass.

Of the four references cited in support of this rejection, only Schwarz utilizes polymethylcyclsiloxane. However, Schwarz is only using this material to prepare silicic acid. There is no suggestion in Schwarz that the resulting silicic acid dispersion is suitable for build up as a deposit on a support. There is also no indication that such a deposit can be consolidated to form a consolidated glass body. Indeed, using the procedure of Schwarz in this manner would be contrary to the teachings of this reference which seeks to make a high surface area dispersion that never builds up as a deposit and does not undergo consolidation. There is no expectation that the technique of Schwarz, which processes a polymethylcyclsiloxane to form a silicic acid dispersion, would be useful in conjunction with a process for making a consolidated glass monolith. Since this is, in fact, what Miller, Hyde, and Kawaguchi are making, one of ordinary skill in the art would have had no reason to combine Schwarz with Miller, Hyde, and Kawaguchi to produce high purity fused silica glass.

The USPTO has taken the position that Miller and Hyde disclose the same invention as that claimed by applicants, except that Miller and Hyde do not teach the use of a polymethylcyclsiloxane. Although the USPTO has attempted to construe Kawaguchi as anticipating the use of a polymethylcyclsiloxane, this reference nowhere makes any explicit mention of using this material. It would, therefore, not provide any motivation to use polymethylcyclsiloxanes to prepare glass. Schwarz is the only reference properly relied on as disclosing the claimed polymethylcyclsiloxane. Applicants submit that the combination of these references does not form a proper basis to reject the claims for obviousness.

Applicants do not dispute that the claimed siloxanes were known at the time the present invention was made. However, this is not the issue. The question is whether it would have been obvious at that time to utilize such cyclic siloxanes to make non-porous silicon dioxide glass by forming SiO_2 particles, depositing the particles on a support, and consolidating the deposited particles into a non-porous glass body, as claimed. If Schwarz is simply cited as teaching that polycyclsiloxanes were known, then there is no suggestion to use polycyclsiloxanes in the claimed process, let alone any expectation that such materials could be successfully used to produce a non-porous, high purity fused silica glass.

Schwarz fails to teach numerous aspects of the present invention, including depositing silicon dioxide particles on a support and consolidating the deposited particles into a non-porous high purity fused silica glass. Further, the silicic acid dispersion of Schwarz is never built up on a carrier as a deposit and consolidated. It, instead, is produced in a dispersed form and used in this state to thicken a variety of products. There is no suggestion in Schwarz that the resulting silicic acid dispersion is suitable for build up as a deposit on a support. There is also no indication that such a deposit can be consolidated to form a consolidated glass body. Indeed, using the procedure of Schwarz in this manner would be contrary to the teachings of this reference which seek to make a high surface area dispersion that never builds up as a deposit and does not undergo consolidation. There is no basis to expect that the technique of Schwarz, which processes a polymethylcyclsiloxane to form a silicic acid dispersion, would be useful in conjunction with a process for making a consolidated glass monolith. Since this is, in fact, what Kawaguchi is making, one of ordinary skill in the art would have no reason to combine Schwarz with Miller, Hyde, and Kawaguchi.

At the time that the present invention was made, researchers in the art would not have expected the polycyclosiloxanes of Schwarz to be useful in producing a non-porous body of high purity fused silica glass (See the Declaration of Michael S. Dobbins Under 37 CFR § 1.132 ("Dobbins Declaration") ¶ 5, submitted with Supplemental Amendment Under 37 CFR § 1.116, dated November 23, 1999). In particular, Schwarz's polycyclosiloxanes have a large number of carbon atoms and not all of these carbon atoms would have been expected to combust when passed through a burner (Id.). Indeed, the production of carbon when burning polycyclosiloxanes to form pyrogenic or fume silica or silicic acid is well documented in the literature (Id.). GB 2,049,641 to Kratel et. al., (page 1, lines 6 to 28) states the following:

Very finely divided silica (highly disperse silica) may be manufactured by flame hydrolysis, which comprises reacting a gaseous or vaporisable silicon compound and, optionally, another gas that will burn to form water, with oxygen in a flame (see, for example, DE 900 339, U.S. 2,399,687, G.B. 17325/77 Serial No. 1562966 (equivalent to DE 26 20 737 A1)). Silica manufactured in this manner is known as pyrogenic silica or fume silica. Satisfactory results can be obtained by this method

when silicon tetrachloride is used as the gaseous silicon compound. It is, however, often advantageous to use an organosilane as the gaseous silicon compound, but the silica produced from these compounds tends to be contaminated with carbon and thus tends to be dark in colour. This result when using silicon compounds containing silicon-bonded organic groups, especially halogen-containing silicon compounds, has previously been counteracted by using an additional fuel, namely an additional gas that will burn to form water, for example hydrogen or hydrocarbon.

(Id.). In addition, J. Lipowitz, "Flammability of Poly(Dimethylsiloxanes). 1. A Model for Combustion," J. Fire & Flammability 7: 482-503 (1976) states:

Under fuel-rich conditions ($\phi > 1$), two-stage combustion is evident by formation of inner and outer flame cones. The outer flame cone is a pale bluish color typical of the outer cone of organic flames, both representing further combustion of CO and H₂. However, the inner cone is blue at $\phi < 2.67$ and luminous yellow-white at $\phi > 2.67$. Organic flames are luminous yellow due to blackbody radiation from carbon particles. Significantly, adiabatic calculations show carbon formation from D₄ and MM at $\phi > 2.67$.

* * *

Gray-brown amorphous silica collected above diffusion flames, which are luminous (yellow-white), contains 3-4% total C, primarily elemental carbon, and 0.1-0.2% H. A weak infrared band indicating some C-H bond structure is present at 2925 cm⁻¹. No crystallinity indicative of SiO_{2(g)}, graphite, SiC, or Si₃N₄ is found by x-ray powder diffraction or electron diffraction. Detectability limits are estimated at several %. Particulates consist of 100Å diameter particles tightly aggregated into 700-1000Å clumps which are further agglomerated in chains (Figure 5). Some larger particles (2000-4000Å diameter) appear to be carbon and should contribute appreciably to the observed luminosity.

(Id.).

When, in accordance with the teachings of Schwarz, the dispersion product is used as a thickener, the existence of carbon in the dispersion would not present any difficulties (Dobbins Declaration ¶ 6). In fact, the presence of carbon would most likely have improved thickening (Id.).

However, the presence of carbon impurities could result in significant problems when making a non-porous body of high purity fused silica glass, particularly where that glass is used to make precision optical products like optical waveguide fibers (Dobbins Declaration ¶ 7). In making a non-porous body of high purity fused silica glass, scientists skilled in this area would not want any carbon to be present, not even at a parts per million level (Id.). Their concern at the time inventor Michael S. Dobbins made his invention would have been that production of carbon during glass formation could adversely affect light transmission in a number of ways (Id.). In particular, the presence of carbon particles in the glass would absorb light and cause light scattering resulting in transmission losses (Id.). Moreover, carbon particles in the glass would also be likely to associate with adjacent oxygen atoms that otherwise form silicon dioxide, resulting in C-O bond formation within the glass (Id.). Such C-O bonds would absorb light in the infrared region of the spectrum and cause transmission losses which prevent the light from traveling as far (Id.). This is a particularly significant problem in optical fibers where transmission is in the infrared region of the spectrum and such light must travel long distances (Id.). Carbon formation would also have been expected to physically remove oxygen (otherwise in the form of silicon dioxide within the glass) away from the glass as carbon monoxide (Id.). This would result in an electron deficiency in the resulting glass that would cause transmission loss in the ultraviolet region of the spectrum (Id.). Thus, the formation of carbon in a non-porous body of high purity fused silica glass, such as that used in optical fibers or precision lenses, would be highly undesirable (Id.).

By contrast, all of the claims of the present application call for the production of a non-porous high purity fused silica glass, while claims 13, 16, 17, and 20-22 set forth methods of making optical waveguide fibers. In view of the recognition in the art that passing polycyclosiloxanes through the flame of a burner would have been expected to produce carbon, scientists making a non-porous body of high purity fused silica glass would not have wanted to make such products by burning polycyclosiloxanes (Id.). In rejecting the claims over the combination of

Miller, Schwarz, Hyde, and Kawaguchi, it is exactly this use of Schwarz's polycyclosiloxanes which is proposed.

In response to the above points raised in the Dobbins Declaration, the USPTO refers to paragraph 7 of the Declaration of Dale R. Powers under 37 C.F.R. § 1.132 ("Powers Declaration"), which accompanied the June 30, 2000, Request for Reconsideration. In particular, the Powers Declaration, in addition to comparing silica deposition rates for octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, and hexamethyldisiloxane at equivalent flowrates, attempts to achieve an equivalent atomic Si delivery rate for hexamethyldisiloxane by increasing its flow rate. The effort was unsuccessful. However, it has nothing to do with the Dobbins Declaration which relates to the skilled artisan's lack of motivation to utilize polymethylcyclosiloxanes to make fused silica glass for fear of generating excessive amounts of carbon.

Even if, assuming *arguendo*, the combination of Miller, Schwarz, Hyde, and Kawaguchi could be properly used to reject the claimed invention, which it cannot, any *prima facie* case of obviousness would be rebutted by the evidence of unexpected results achieved by the present invention. See *In re De Blauwe*, 736 F.2d 699, 222 USPQ 191 (Fed. Cir. 1984).

In particular, evidence of unexpected results is found in the Powers Declaration which shows that the results achieved when utilizing a polymethylcyclosiloxane are substantially better than when a linear siloxane is used. More particularly, a series of tests were conducted under similar conditions (including a siloxane volumetric flow rate of 10 cc/minute) to evaluate the production and deposition rates of silica soot produced from vaporized octamethylcyclotetrasiloxane, hexamethyldisiloxane, and decamethylcyclopentasiloxane (Powers Declaration ¶¶ 4-5). These tests showed that the above siloxanes produced the following amounts and rates of silica soot deposition:

| Siloxane | Si Delivery Rate (Si atoms per minute) | Amount of Silica Soot Deposited (grams) | Rate of Silica Soot Deposited (grams/minute) |
|------------------------------|--|---|--|
| Octamethylcyclotetrasiloxane | 3.62 | 1205 | 3.26 |
| Decamethylcyclopentasiloxane | 3.63 | 1186 | 3.21 |
| Hexamethyldisiloxane | 2.64 | 855 | 2.31 |

(Powers Declaration ¶ 6). Thus, the polymethylcyclorosiloxanes of the present invention achieve a substantially better rate of silica soot deposition than hexamethyldisiloxane.

An attempt was also made to utilize an atomic Si delivery rate of 3.62 grams of Si atoms per minute of hexamethyldisiloxane which was similar to the above atomic Si delivery rates of 3.62 and 3.63 grams of Si atoms per minute of octamethylcyclotetrasiloxane and decamethylcyclopentasiloxane, respectively (Powers Declaration ¶ 7). However, the burner flame became unstable, black carbon-laden soot was generated, and a non-uniformly shaped preform was produced (*Id.*). As a result, this run was terminated (*Id.*). Dr. Powers has extensive and impressive experience in fabricating fused silica glass and optical fibers (Powers Declaration ¶ 3). Based on his expertise in this field, he believes that silica deposition achieved with hexamethyldisiloxane is most fairly compared with silica deposition achieved with octamethylcyclotetrasiloxane and decamethylcyclopentasiloxane when similar volumetric flowrates are utilized for each (Powers Declaration ¶ 8). As the above data clearly demonstrates, the polymethylcyclorosiloxanes of the present invention (e.g., octamethylcyclorosiloxane and decamethylcyclopentasiloxane) achieve substantially higher levels and rates of soot deposition than linear siloxanes (e.g., hexamethyldisiloxane). Schwarz teaches that hexamethyldisiloxane is preferred over other disclosed alternatives, such as polymethylcyclorosiloxanes. Therefore, one of ordinary skill in the art would have expected hexamethyldisiloxane to achieve better results to the extent, if at all, Schwarz was relevant to making a consolidated glass body (Powers Declaration ¶ 9). However, as shown by the above results, octamethylcyclotetrasiloxane (and decamethylcyclopentasiloxane) achieved substantially higher silica soot deposition rates than hexamethyldisiloxane (*Id.*). In view of Schwarz's disclosure of hexamethyldisiloxane as preferred, the results obtained in the above experiment are, in Dr. Powers' opinion, highly unexpected (*Id.*). Such unexpected results rebut any *prima facie* case of obviousness based on the combination of Miller, Schwarz, Hyde, and Kawaguchi. See In re DeBlauwe, supra.

Further, as shown in Example 4 and Figure 4 of the present application, the use of octamethylcyclotetrasiloxane has substantially improved deposition efficiency over SiCl₄. This is highly unexpected, particularly when one considers that Schwarz, in using such polycyclorosiloxanes, does not suggest that the combustion product of this starting material can even form a deposit on a carrier, let

alone deposit with greater efficiency. Thus, claims 36-38 and 51-53, which are directed to the use of octamethylcyclsiloxane, are patentable of their own accord.

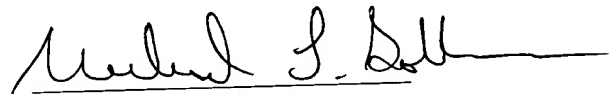
For all of these reasons, the obviousness rejection of claims 12, 13, 22, 33-44, 46, 47, and 50-53 over Miller in view of Schwarz, and, optionally, Hyde and/or Kawaguchi, is improper and should be withdrawn.

The objection of claims 45 and 48 for depending from a rejected base claim is respectfully traversed in view of the above amendments.

In view of all of the foregoing, applicants submit that this case is in condition for allowance and such allowance is earnestly solicited.

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Respectfully submitted,



Michael L. Goldman
Registration No. 30,727

Nixon Peabody LLP
Clinton Square, P.O. Box 31051
Rochester, New York 14603-1051
Telephone: (585) 263-1304
Facsimile: (585) 263-1600

